



LOWELL PUBLIC SCHOOLS
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To: Jim Hall
From: Rick Underwood
Re: Facilities Improvements
Date: 1/12/23

Status of HVAC systems (by Eileen DelRossi): Request Superintendent to provide a status list of all major HVAC replacements and repairs:

Although we continue to face challenges throughout our schools related to heating, cooling, roof leaks, and other issues (see attachment), I wanted to stress that great progress is being made. Lowell Public Schools and the City of Lowell have done lots of great things over the last few years to address facility needs. We have solicited, awarded and completed 8 MSBA projects at 6 schools: Sullivan, STEM, Greenhalge, Daley, Bailey and McAuliffe. Each received new boilers systems, complete with pumps, plumbing and boiler controls. The Sullivan and Bailey also received new roofs. The City of Lowell and LPS are also in the design acceptance phase for 7 other projects: Robinson- Roof, Boiler and Windows; Wang- Roof and Boiler; and Shaughnessy- Boiler system.

We have also completed a long overdue new roof on the 1922 building and we are in the last days of a new roof being completed on the Freshman Academy. We have also installed 3 new playgrounds at schools which previously did not have a playground. We have also created the necessary information to place a bid on the street to repair over 1700 windows with new balance hardware across the district, as well as processed the bid for the installation of water filling stations at every school. We have also completed several construction projects to alleviate the need to educate some students in the hallways of the STEM.

There has also been breakout space built at the Stoklosa and safety has been enhanced at all schools by adding exterior recording cameras at all schools. We have also added interior cameras in all Middle School hallways. We also added door access card readers to all schools (not all exterior doors) and added numbers to all exterior doors to be easily identifiable to first responders in case of an emergency. We have also replaced over 191 broken windows across the district and hundreds of ripped or broken screens. The new Uni-Ventilator project at the Robinson will also soon be finalized and will start this spring. 1.3 million is also dedicated to new exhausted vent units which are projected to be completed by the end of May. 100k was

dedicated to the Barlett School boiler refactoring and 350k was spent tuning up heating systems throughout the district prior to heating season. We also completed a large asbestos abatement involving old tile and glue/mastic at the Reilly School, then replaced it with new VCT tile, in addition to installing new suspended ceilings in 4 classrooms.

These are just some of the things we have been able to address in the last several years. While we were navigating COVID-19, we were able to get a lot done to improve the buildings. We still have lots of really awesome things heading our way, such as a 4.2 million Federal Grant 3.2 million which will be used to address several of our broken chillers and \$1,000,000 is dedicated to controls to help regulate heating systems. Additionally, several energy savings grants will reduce our costs, allowing that money to be spent in other areas.

I'm sure you are aware that there are other accomplishments not listed here and I know it's easy to miss what has already been done when we still have so far to go. I'll keep up the fight if you will keep up the support!

This report was produced to provide information pursuant to the School Committee's motion. If there are any questions or concerns with this report or the HVAC and mechanical items, please feel free to call me 978-454-2010.

HVAC/Mechanical Issues (1/12/23)

Pawtucket Memorial Elementary School

***Control issues**

- *AHU Unit in boiler room has cracked coil; it has been down for years. Being eliminated with MSBA updates (Don't repair)
- *Re-circ pump #7 on top of boiler 1 isolated bad seal
- *Issues with thermostats throughout school
- *Issue with art room ceiling unit (access through the music room) possible belt shaft-damaged blower wheel serious vibration (Rooms Freezing)
- *Café unit needs to be tied back into EMS system running off temp t stat control (Installed by DPW)-main control checked/possibly replaced (Over heats have to manually shut down for kids to eat in cafe).
- *Units in ceilings need to be opened up filters changed and serviced-fresh air dampers checked
- *Gym units-controls dampers inspected checked for proper operation
- *Heating electric Baseboard element in gym teacher's room has been broken for years needs replacement
- *Main control that switches system over from heating to cooling broken has to be done manually (If cooling goes through heating loop leaks condensation school wide-heating side not insulated)
- *Roof top unit that serves 2nd floor/Library needs main temp control repaired-communication side as well/no control on temps
- *Roof top unit that serves 1st floor main office suite down have temp heaters in there but they do not maintain temp area cold (indoor fan section needs replacement)
- *Exhaust fans should be checked/adjusted possibly put on timers (Scheduled for replacement)
- *Fresh air dampers repaired-replaced some air canisters obsolete
- *Check Communication on EMS
- *Liebert unit that controls temps on IT equipment in alarm due for replacement/original-zero maintenance condenser section in rough shape on roof
- *Liebert Unit that serves elevator machine room down-possible clogged drain water detected in drain pan-possible replacement original to building zero maintenance-condenser section on roof in rough shape
- *Chiller needs replacement.

Wang Middle School

- *Thermostat issues throughout school/air leaks areas overheating issue with valves in class room units
- *Condensers on roof don't work correctly with interior units/bad compressors/refrigeration leaks Pneumatic switches need to be swapped out to low voltage/DDC controls to work correctly

- *Inline coils throughout school need to be clean/some need access doors cut into duct/the ones in locker rooms are matted solid only air comes out access doors
- *Exhaust fans scheduled for replacement.
- *AHU Coils in penthouses should be cleaned units vacuumed out-issues with fresh air dampers
- *AHU Coil in basement should be cleaned vacuumed out-issues with dampers
- *Ac Condenser that serves auditorium needs to be checked coil cleaned/pressures checked low on charge locked out
- *Fresh air dampers in penthouse damaged/disconnected not working-some obsolete
- *Check Communication on EMS-possible upgrade from pneumatics to DDC with individual class room controls

McAvinnue Elementary School

- *Exhaust fans scheduled for replacement
- *Issues with Main office AC has own condenser on roof
- *Chiller needs replacement.
- *Boiler room fresh air damper needs repair doesn't open and closed as designed
- *AHU in boiler room has cracked coil (Donet repair)
- *Café rooftop should have coil cleaned unit vacuumed out- control valve needs attention as well does not regulate temp overheats
- *Café roof top unit fresh air dampers repaired
- *Check Communication on EMS-possible upgrade from Pneumatics to DDC with individual classroom controls?
- *Issues with couple rooms no heat-overheating

Greenhalge Elementary School

- *Chiller needs replacement.
- *Exhaust fans scheduled for replacement.
- *Issues with thermostats/pneumatic leaks.
- *Air separator on colling side needs to be inspected-possibly replaced
- *Thermostat Issues/air leaks
- *Café AHU unit has no real control overheats (Katie's closet)
- *Café AHU unit coil still has leak inside unit (Katie's closet)
- *Café AHU unit in Katie's closet has bad inline circ pump at unit (burnt out)
- *AHU in pent house on 3rd floor back corner adjust belt/clean coil vacuum out unit-fresh air damper checked
- *Fresh air dampers repaired throughout school
- *Check Communications on EMS-possible upgrade from Pneumatics to DDC with individual class room controls?
- *Multiple class room units down.

McAuliffe Elementary School

- *Café unit needs temp control unable to regulate
- *Gym unit needs temp's control unable to regulate overheats
- *Chiller needs replacement

- *Issues with thermostats-air leaks
- *Leaking actuators in the classroom units-Run thru units check operations/damper inspection
- *Unit in hallway that serves K wing has issues leaking valve-damaged wall no heat in hall
- *Few Ceiling units overheat, not real control on temps-one unit down (second floor) missing actuator cut out a few years ago never reinstalled?
- *Check controls/Communications on EMS-possible switch from pneumatics to DDC/individual class room controls
- *3 way valve installed on Heating side to isolate building for domestic hot water during the warmer months
- *Exhaust fans scheduled for replacement.

Robinson Middle School

- * Two bad VFD's - two pump motors down-pump leaking water in pit (MSBA Project)
- *Thermostat Control issues throughout building no regulation on heating (Units Scheduled for replacement)
- *Units in classrooms back side wide open to the elements/no sleeve connecting to the fresh air damper-units should be updated with better controls (Units Scheduled for replacement)
- *Smaller hall wall units need replacement cabinets falling apart-units down (Not part of scheduled work)
- *AHU in boiler room has cracked coil needs repair has been down for years(Don't Repair)
- *Re-circ pump on top of boiler #1 leaking isolated (system will run without)
- *Exhaust Fans scheduled to be replaced.
- *Ahu units in gym need filters changed and units cleaned-EMS controls checked-one possible bad rib relay-Belts adjusted/replaced-controls reworked updated to work in sequence with valve and fresh air damper (Possible Replacement-given there age)
- *Roof top unit has issues with fresh air dampers as well as bypass damper in unit-unit overheats no real control on temps second floor gets very uncomfortable at times (Unit has ran in ideal for years with not much maintenance done-should be replaced with unit that's more efficient and able to control
- *Kitchen Ceiling units-scheduled to be replaced
- *Café AHU unit scheduled to be replaced (Two units)
- *Check controls/Communications EMS-update control panel obsolete-possible switch from pneumatics to DDC/individual controls in each room? (New units will have controls in them-will they be able to be tied into EMS)

Adult Education

- *Boiler has crack in section-needs repair
- *Condensate tank new but impellers on condensate tank have issue (pump impellers should be swapped out to brass or high temp polymer composite impeller-180-200 temps returning from line)
- *Steam vents/ controls need replacement broken
- *Exhaust on roof that serves bathrooms needs repair-no ventilation in rest rooms
- *Check Control side EMS/communication

- *16x16 Pit with pump should be installed in floor in boiler room as safety measure to remove water if something leaks, basement floods out and has in previous incidents
- *Fan units in rooms condemned all should be replaced.

Murkland Elementary School

- *Pumps need to be checked-greased-couplings-amp draw
- *Leaking actuators in class room units/units need run threw-dampers checked
- *Thermostat issues throughout schools- Pneumatic leaks
- *Ceiling units need to be opened up inspected/filters changed-fresh air dampers checked for proper operation
- *Chiller needs replacement
- *Cooling Pump 1 leaking
- *Missing cap on flue stack on roof (water leaking in boiler room)
- *Music room baseboard heat around perimeter needs to be tied into loop-2 sections disconnected??
- *Music Room Ceiling unit in hall no control on temp-thermostat broken in class-need valve replaced.
- *Check Control side EMS/communication-possible switch from pneumatics to DDC?
- *Exhaust fans scheduled for replacement.

Laura Lee Therapeutic Day School

- *Check Control side EMS/communication-possible sensors around the building to get better control on temps?

Reilly Elementary School

- *Boiler #1 condensation continues to build up internally shutting down boiler (condensation line left disconnected from drain so boiler will fire at 100%); Bad heat exchanger
- *Boiler #2- bad heat exchanger
- *VFDs should be installed to prolong the life of the pump motors-run 100% 24-7
- *Issues with pumps blowing couplings apart (System needs air separator installed)
- *Actuators need to be reinstalled on café units (over heating); Cafe units falling apart need replacement.
- *Two wall mounted HVAC units in Kindergarten wing need to be replace-don't work (main entrance for pre-k students gets very cold)
- *Units in ceiling in main entrance vestibule need replacement (remove return grill in ceiling for access); possible hatch on side wall
- *Duct work in gym needs new supply grills installed-ductwork needs to be paint chipping falling making mess
- *Actuator in hall heading to café leaking been leaking for some time (large hall it can be cut out and straight piped for better heating in hall)
- *AHU units in gym penthouse are due for replacement rusted out falling apart- (gym heating) temporary coils made to get some sort of heat but just a temp fix need attention
- *Exhaust fans scheduled for replacement.
- *Check control side/Communications EMS-Pneumatics don't work

Sullivan Middle School

- *Issues with fresh air dampers throughout school-broken replace-some canisters obsolete
- *Exhaust fans scheduled for replacement.
- *Condensers on roof don't work in sync with units in classrooms-ongoing issues controls/refrigeration leaks/bad compressors (need low voltage/DDC controls installed
- *Classrooms over heating/ceiling units not working properly
- *90% of the fresh air dampers are disconnected or broken on all the AHU's throughout the school
- *Auditorium AC unit locked out in safety possible issue with refrigeration charge
- *Café over heats; kitchen overheats issues with dampers on AHU Heating valve
- *Multiple thermostats blanked out not working-possible warranty replacement?
- *Interior Smaller classrooms have AHU's-electric reheat coils in ceiling that don't work no windows in these areas, so there is no air flow and no relief on comfort concerns-some designed with ac but not currently working, has been down for some time; AHUs in ceiling are do for update/replacement
- *Three-way valve installed to separate heating loop from domestic hot water loop during the warmer months

Moody Elementary School

- *School only has one boiler no lead lag, if boiler goes down no supplemental heat
- *Check Control side EMS/communication

BRIDGE Academy

- *Various Radiator controls leak- need replacement
- *All the piping in basement needs replacement rotting out continuously leaking
- *Check Control side EMS/communication possible installation of better sensor set up to get better temp control instead of running boiler at high temp to satisfy area?

Leblanc Therapeutic Day School

- *Issue with Boiler shutting down low water parts on order
- *Couple Radiator controls need to be replaced
- *Check Control side EMS/communication

Daley Middle School

- *Coil in AHU above the gym needs replacement as previous freeze caused serious damage to the gym floor.
- *Multiple fan units in classrooms need power switches replaced
- *Exhaust fans scheduled to be replaced
- *4 condensers on roof don't work reasons unknown
- *Pneumatics not working as designed-possible upgrade to DDC with individual class room controls?
- *Main office heating coil in ceiling above main desk previously frozen and cracked-unit has dual coil provides ac to office when working correctly-repair unknown

Bailey Elementary School

- *Exhaust fans scheduled for replacement
- *Coil in AHU above 2 floor boys' bathroom ceiling repaired- waiting on motor to be installed.
- *Smaller fan coil units in ceilings around school need filters changed-ceilings marked for locations
- *Chiller should be opened up and coils chemically cleaned (yearly maintenance) Refrigeration charge checked
- *Larger ceiling units need filters changed/bearings oiled
- *Check the Control side EMS/communication-update system.

Butler Middle School

- *Exhaust fans scheduled for replacement
- *Chiller needs replacement
- *Issue with thermostats not operating units as designed overheating areas-Rooms
- *Issues with some of the classroom fresh air dampers
- *Boilers don't run lead lag /continues to run even though not called for heat, overheats school
- *Pneumatic air leaks throughout school
- *AHU #3 needs complete replacement supply fan motor frame broken vibrates-in line controls/fresh air dampers needs to be repaired to get proper comfort control on interior rooms
- *AHU #3 VFD burnt out- needs replacement
- *AHU Fresh air dampers all disconnected
- *AHU #2 no control on heating-temp control placed inside return side of unit by DPW needs permanent fix
- *AHU #2 fresh air dampers disconnected
- *Heating unit(RTU) in locker room need's replacement burnt out condemned
- *AHU #1 located in 2nd floor penthouse needs attention airlines for actuators are all disconnected permanent repair needed
- *AHU #1 in 2nd floor penthouse fresh air dampers disconnected
- *Check Controls EMS side/communication-issues remain with pneumatics throughout building Possible upgrade to DDC with individual class room controls

Shaughnessy Elementary School

- *Boilers need to attention continue to go down on flame failure at times
- *Ceiling units around school need to be ope*AHU in Boiler room above pipe fresh air damper controls all disconnected serves gym, no real control on temps in gym need filters change coils checked
- *Second floor Ceiling unit heading towards roof access has bad bearing/grinding really loud
- *Library unit in ceiling possibly needs new motor over amps trips out
- *Chiller needs complete replacement
- *Exhaust fans scheduled for replacement
- *Check Controls EMS side/communication-issues with Pneumatic controls remain possible upgrade to DDC with individual class room controls?

JG Pyne Arts Magnet School

- *AHU in the boiler room down (Not Needed) will eventually be removed from design when eligible for MSBA update
- *Boiler #1 needs replacement cracked section
- *Main control to swap system from heating to cooling broken/done manually
- *Exhaust fans scheduled for replacement.
- *Chiller needs complete replacement
- *Multiple rib relays have to be wired back in for EMS in classroom units
- *Roof top units have to shut down and turned on manually due to overheating issues/no temp control-need to reestablish com between units and controls-valves need to be checked
- *Small circ pump in gym up near ceiling needs replacement leaks currently isolated
- *IT closet has ductless split needs attention
- *Circ Pump in ceiling under roof top that serves café needs repair
- *Ceiling units need to be opened up filters changed and inspected
- *Check Controls EMS side/communications-possible software issue-upgrade? controls not communicating with units, if location loses power units have to be manually reset? (Concern in colder weather)

STEM Academy

- *Classroom units need attention no way to control temps-areas in school are unbearable at times
- *Ductless splits for IT area in the front of build need maintenance/service cleaning
- *Condensers on roof need replacement-main office areas
- *Café overheats no control on temps
- *Exhaust fans scheduled for replacement.
- *Gym Units need to be opened up serviced-dampers checked-valves checked
- *Check controls EMS side/communication- pneumatics obsolete possible upgrade to DDC with individual class room controls

Bartlett Community Partnership School

- *Building needs complete control upgrade-obsolete
- *Classroom units will need some of the internal controls upgraded to work properly
- *Exhaust fans scheduled for replacement
- *AHU units on the stage in café need attention no thermostat controls/fresh dampers-rib relays replaced
- *AHU in ceiling in room #4 in basement level needs to be opened up and cleaned filter changed CSA classroom
- *Exhaust fan in ceiling in room #4 needs possible replacement inspection very loud disrupts class room
- *Check controls EMS side/pneumatics obsolete possible upgrade to DDC with individual class room controls

Stoklosa Middle School

- *Ceiling units need to be opened up filters changed
- *HVAC worked scheduled to take place waiting on LAW
- *Chiller Needs complete replacement.
- *Cafe unit not working properly
- *Rooftops gone threw coils cleaned
- *Rooftops needs motors replaced
- *Rooftops need VFDs replaced
- *Exhaust fan in ceiling in main hall extremely loud bad bearing? possible replacement-?
- *VFD In café closet burnt out
- *Old shop rooms areas converted in to class rooms (left side of boiler room) units on roof don't heat area as the should for room use-area runs colder
- *Check controls EMS side/communication

Morey Elementary School

- *AHU 10 that serves main office needs replacement
- *HVAC worked scheduled to take place waiting on LAW
- *Some controls in the smaller offices don't work as they should-possible swap out?
- *Roof top unit that serves main floor left wing needs complete return section replaced
- *Check AC on all roof top units for proper operation-replace adjust belts
- *Make up Air units that severs kitchen section down/complaints of gas smell when running (due to being enclosed -possible vent extension?)
- *Check communication EMS side/controls-possible upgrade to better individual class room controls
- *Exhaust fans scheduled for replacement

Lincoln Elementary School

- *Chiller needs complete replacement.
- *Few classroom units need motors bearings replaced
- *Ceiling units need to be opened up filters changed serviced
- *Thermostat issues-air leaks
- *Fresh air damper issues with class room units
- *Exhaust fans down/repair put timers to create schedule
- * Check communication EMS side-Pneumatic issues-leaks possible upgrade to DDC with individual class room controls?

Washington Elementary School

- *Building needs better control on temps-possible sensors installed instead of thermostat on location
- *Controls/vents checked on radiators around the school